

REMARKS

Claims 1, 2, and 6-14 stand rejected under 35 U.S.C. § 101. Claims 1, 2, 6, 15, 16, 20, 23, and 27 stand rejected under 35 U.S.C. § 103(a) as unpatentable over US patent publication 2002/0174306 by Gajjar et al. (Gajjar1) in view of US patent 7,415,506 to Gajjar et al. (Gajjar2) and in further view of US Patent 7,480,912 to Arnold (Arnold). Claims 7-14, 21, 22, 24-26, and 28 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Gajjar1 in view of Gajjar2, Arnold, and US patent publication 2004/0123063 by Dalal (Dalal).

Applicants thank the Examiner for the telephone interview of May 4 2009. We discussed the present invention and a proposed amendment. The Examiner suggested several changes to the amendment, to which Applicants agreed.

Response to rejections of claims under 35 U.S.C. § 101

Claims 1, 2, and 6-14 stand rejected under 35 U.S.C. § 101 as comprising modules that may be implemented in software. Applicants have amended claim 1 with the limitation “...a storage device storing executable code...” and “...a processor executing the executable code, the executable code comprising...” The amendment is fully supported by the specification. See page 7, ¶ 25-26. Claim 11 is similarly amended. Applicants submit that as amended claims 1 and 11, and also dependent claims 7 and 10 are directed to statutory subject matter under 35 U.S.C. § 101. Claims 2, 6, 8, 9, and 12-14 are canceled.

Amendments to the Claims

In addition, to the amendment described above, Applicants have amended claim 1 with the limitation “...a provisioning module receiving a storage alert for a client in response to detecting a need to extend a file system for the client...” The amendment is well supported by the specification. See page 15, ¶ 53.

Claim 1 is further amended with the limitation “...specifying a Logical Unit Number (LUN) storage resource of a plurality of ~~existing~~ storage resources corresponding to the file systema client as a model storage resource in response to the storage alerta modeling policy...” The amendment is well supported by the specification. See page 11, ¶ 39; fig. 5, ref. 508.

Applicants have further amended claim 1 with the limitation “...monitoring the plurality of existing storage resources and identifying a ~~firstmodel~~ storage server and a ~~firstmodel~~ storage pool forof the model storage resource in the modeling policy, wherein the first storage pool comprises the model storage resource and the ~~firstmodel~~ storage server manages a plurality of storage pools comprising the first storage pool...” The amendment is well supported by the specification. See page 11, ¶ 39; pages 12-13, ¶ 44; page 16, Table 1.

Claim 1 is further amended with the limitations “...provisioning a new LUN storage resource for the file systemelient in the ~~firstmodel~~ storage pool if the new LUN storage resource can be provisioned in the ~~firstmodel~~ storage pool, wherein the new LUN storage resource includes all attributes of the model storage resource...” and “...provisioning the new LUN storage resource for the file systemelient in one of the plurality ofany storage pools managed by the ~~firstmodel~~ storage server if the new LUN storage resource cannot be provisioned in the first

storage pool, wherein the new LUN storage resource comprises all of the attributes of~~is modeled~~
after the model storage resource....” The amendments are well supported by the specification.

See pages 12-13, ¶ 44; page 16, Table 1, ¶ 56.

Claims 11 and 15 are amended with limitations similar to claim 1. In addition, claim 15 is amended to specify that the computer readable code is executed by a processor. The amendment is well supported by the specification. See page 7, ¶ 25.

Applicants have added new claims 29, 33, and 37. The new claims are well supported by the specification. See page 12, ¶ 42; pages 12-13, ¶ 44. In addition, Applicants have added new claims 30, 34, and 38. The new claims are well supported by the specification. See page 9, ¶ 33. Applicants have further added new claims 31, 35, and 39. The new claims are fully supported by the specification. See page 10, ¶ 35; page 11, ¶ 38-39. Applicants have also added new claims 32, 36, and 40. The new claims are well supported by the specification. See page 17. ¶ 58.

Claim 7 is amended to conform to an amended predecessor claim. Claims 2, 6, 8, 9, 12-14, and 20-28 are canceled.

Response to rejections of claims under 35 U.S.C. § 103(a)

Claims 1, 2, 6, 15, 16, 20, 23, and 27 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Gajjar1 in view of Gajjar2 and in further view of Arnold. Claims 7-14, 21, 22, 24-26, and 28 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Gajjar1 in view of Gajjar2, Arnold, and Dalal.

Claim 1 as amended includes the limitations:

“...a storage device storing executable code;

a processor executing the executable code, the executable code comprising

a provisioning module receiving a storage alert for a client in response to detecting a

need to extend a file system for the client;

a specification module **specifying a Logical Unit Number (LUN) storage resource**

of a plurality of storage resources corresponding to the file system as a

model storage resource in response to the storage alert;

a monitoring module monitoring the plurality of existing storage resources and

identifying a first storage server and a first storage pool for the model

storage resource, wherein the first storage pool comprises the model

storage resource and the first storage server manages a plurality of

storage pools comprising the first storage pool;

the provisioning module **provisioning a new LUN storage resource for the file**

system in the first storage pool if the new LUN storage resource can be

provisioned in the first storage pool, wherein the new LUN storage

resource includes all attributes of the model storage resource; and

the provisioning module **provisioning the new LUN storage resource for the**

file system in one of the plurality of storage pools managed by the first

storage server if the new LUN storage resource cannot be provisioned

in the first storage pool, wherein the new LUN storage resource

comprises all of the attributes of the model storage resource.”

Emphasis added.

Independent claims 11 and 15 include similar limitations. Thus the present invention claims receiving a storage alert for a client in response to detecting a need to extend a file system for the client and specifying a Logical Unit Number (LUN) storage resource of a plurality of storage resources corresponding to the file system as a model storage resource in response to the storage alert. See claim 1. The present invention further claims monitoring the plurality of existing storage resources and identifying a first storage server and a first storage pool for the model storage resource. See claim 1. The first storage pool comprises the model storage resource and the first storage server manages a plurality of storage pools comprising the first storage pool. See claim 1. In addition, the present invention claims provisioning a new LUN storage resource for the file system in the first storage pool if the new LUN storage resource can be provisioned in the first storage pool. See claim 1. The new LUN storage resource includes all attributes of the model storage resource. See claim 1. The present invention further claims provisioning the new LUN storage resource for the file system in one of the plurality of storage pools managed by the first storage server if the new LUN storage resource cannot be provisioned in the first storage pool. See claim 1. The new LUN storage resource comprises all of the attributes of the model storage resource. See claim 1.

Applicants submit that claim 1 is distinguished from Gajjar1, Gajjar2, and Arnold by claiming “...specifying a Logical Unit Number (LUN) storage resource of a plurality of storage resources corresponding to the file system as a model storage resource...,” “...identifying a first

storage server and a first storage pool for the model storage resource, wherein the first storage pool comprises the model storage resource and the first storage server manages a plurality of storage pools comprising the first storage pool...,” “...provisioning a new LUN storage resource for the file system in the first storage pool if the new LUN storage resource can be provisioned in the first storage pool, wherein the new LUN storage resource includes all attributes of the model storage resource...,” and “...provisioning the new LUN storage resource for the file system in one of the plurality of storage pools managed by the first storage server if the new LUN storage resource cannot be provisioned in the first storage pool, wherein the new LUN storage resource comprises all of the attributes of the model storage resource....”

The Examiner points out that Gajjar2 teaches identifying service requirement for a media unit, then selecting a best fit media unit from media units that meet the service requirements. Office Action of April 1, 2009 (OA), page 6, lines 11-15; citing Gajjar2, col. 6, lines 37-58. The Examiner further notes Gajjar1 teaches that storage devices are selected for provisioning if discovered attributes satisfy storage heuristics in the storage profile, with a storage fabric connecting storage processors. OA, page 5, lines 7-12; citing Gajjar1, page 1, ¶ 8; page 2, ¶ 28. In addition, the Examiner notes that Arnold teaches a management unit determining that it requires new storage to be allocated, and for each candidate new arrangement, evaluating its model of the storage system and estimating the benefit of the of the new arrangement as well as the cost of putting the new allocations into effect. OA, page 7, line 7 – page 8, line 2.

Applicants have amended claim 1 to claim specifying a Logical Unit Number (LUN) storage resource of a plurality of storage resources corresponding to the file system as a model

storage resource. In contrast, Gajjar2 teaches identifying service requirements for media units (storage resources). Gajjar2, col. 6, lines 37-58. Thus the present invention claims that a model storage resource be specified, rather than for service requirements or a provisioning policy to be specified as taught by Gajjar2. Specifying the model storage resource simplifies the process of determining requirements, and increases the probability that a new LUN storage resource will be provisioned with acceptable attributes as the attributes of the acceptable model storage resource are replicated. Applicants therefore submit that Gajjar2, and also Gajjar1 and Arnold do not teach the element "...specifying a Logical Unit Number (LUN) storage resource of a plurality of storage resources corresponding to the file system as a model storage resource...."

Applicants have further amended claim 1 to claim identifying a first storage server and a first storage pool for the model storage resource. In contrast, Gajjar1 teaches selecting storage devices that satisfy heuristics in a storage profile, but not identifying a storage server and a storage pool for the model storage resource. Gajjar1, page 1, ¶ 8. Identifying the first storage server and first storage pool allow the present invention to provision the new LUN storage resource in the first storage pool or else in a storage pool of the first storage server. Applicants submit that Gajjar1 and also Gajjar2 and Arnold do not teach the element "...identifying a first storage server and a first storage pool for the model storage resource, wherein the first storage pool comprises the model storage resource and the first storage server manages a plurality of storage pools comprising the first storage pool..."

Applicants have also amended claim 1 to claim provisioning a new LUN storage resource for the file system in the first storage pool if the new LUN storage resource can be provisioned in

the first storage pool and provisioning the new LUN storage resource for the file system in one of the plurality of storage pools managed by the first storage server if the new LUN storage resource cannot be provisioned in the first storage pool. In contrast, Gajjar1, Gajjar2, and Arnold teach provisioning a new storage resource based on policies or profiles, but do not specify the storage pool or storage server for the new storage resources. Arnold, col. 5, lines 23-27; Gajjar1, page 4, ¶ 46-47. In addition, Gajjar1, Gajjar2, and Arnold do not teach that the new LUN storage resource comprises all of the attributes of the model storage resource. Instead, Gajjar1, Gajjar2, and Arnold teach policies or profiles to specify the attributes of the new storage resources. Arnold, col. 5, lines 23-27; Gajjar1, page 4, ¶ 46-47. Applicants therefore submit that Gajjar1, Gajjar2, and Arnold do not teach the elements “...provisioning a new LUN storage resource for the file system in the first storage pool if the new LUN storage resource can be provisioned in the first storage pool, wherein the new LUN storage resource includes all attributes of the model storage resource...” and “...provisioning the new LUN storage resource for the file system in one of the plurality of storage pools managed by the first storage server if the new LUN storage resource cannot be provisioned in the first storage pool, wherein the new LUN storage resource comprises all of the attributes of the model storage resource....”

Applicants submit that claim 1 is allowable as Gajjar1, Gajjar2, and Arnold do not teach each element of the claim. Dalal also does not disclose the elements discussed above. Applicants therefore submit that claims 11 and 15 are allowable for the same reasons as claim 1. In addition, Applicants submit that claim 7, 10, and 29-40 are allowable as depending from allowable claims. Claims 2, 6, 8, 9, 12-14, and 20-28 are canceled.

Conclusion

As a result of the presented remarks, Applicants assert that the application is in condition for prompt allowance. Should additional information be required regarding the traversal of the rejections of the claims enumerated above, Examiner is respectfully asked to notify Applicants of such need. If any impediments to the prompt allowance of the claims can be resolved by a telephone conversation, the Examiner is respectfully requested to contact the undersigned.

Respectfully submitted,

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